Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.5, No.27, 2014
www.iiste.org

Assessment of Physical Activity (PA) Readiness and Participation among Staff in Nigerian Universities

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Abstract

Inactivity and sedentary living are on the increase globally. Readiness to begin, continue and sustain PA (physical activity) behaviour plays key roles in attaining desirable health outcome. Evidence-based data regarding readiness to begin and /or maintain physical activity among staff in workplaces including the University environment have become indispensable for initiating PA behaviour promotion policies and programmes. This study adopted the descriptive survey research design to assess the prevalence of PA readiness and participation behaviors among university staff in south-eastern Nigeria. Six hundred staff, (age ranged from 25-65 years old, male and female, teaching and non-teaching) from two Federal Universities participated in the study. Self-reported data were obtained with PA stages of change assessment instrument. Results indicate 60% of all respondents representing (pre-contemplation, contemplation and preparation) were not participating in PA or doing so infrequently, while 40% were actively participating. T-test yielded no significant differences for both gender, [Males (M=3.09; SD=1.39), Females (M=2.95, SD=1.37) t=1.20, p= .23] and staff categories, [Teaching staff (M=3.13; SD=1.33), Non-teaching staff (M = 3.03; SD = 1.43) t=1.78, p= .07]. In conclusion, majority of university staff were at the pre-adoption or pre-action stages irrespective of gender and staff categories. PA programme to facilitate transition to action and maintenance stages was recommended.

Keywords: physical activity (PA), university staff, stages of change, health, behavior

1. Introduction

Beginning, continuing and sustaining active and healthy lifestyle behaviors are vital for achieving desirable health outcome.The significance of PA (Physical activity) as one of major positive lifestyle behaviors that promotes general health of the population is well documented (Nigg, et al. 2011;WHO [World Health Organization], 2007, 2009). Some advantages of participating in regular PA include short term benefits of a healthy heart, muscles, bones and joints; and long term benefits of delayed onset of dying prematurely, developing type 2 diabetes, high blood pressure and colon cancer (Pace, 2000). Other benefits include economic, social, environmental and mental health benefits such as better ability to cope with stress and depression, improved concentration, enhanced memory, productivity, psychological wellbeing and mental alertness (Factsandstats, 2005).

Conversely, physical inactivity and sedentary living have been identified as major independent modifiable risk factors for chronic diseases, the fourth leading risk factor for global mortality associated with mental health injuries, falls and obesity (WHO, 2009). WHO (2010a) estimates that up to 60% of the global population fail to complete the recommended amount of PA required to induce health benefits. In Africa, April, Kolbe-Alexander, Draper and Lambert (2010) observes that there are indications of high levels of physical inactivity among adults and children. Obasanjo, the then Nigerian president had earlier projected that chronic diseases resulting from inactive lifestyle will be a leading cause of death by 2015 and that up to 44% of women would be overweight by 2010 (Obasanjo 2005).

The workplace is an important setting for health promotion including physical activity. Marcus, et al, (1992) opined that readiness for adoption, participation and persistence in PA are intricate behavior requiring both cognitive and behavioral strategies of change to reach self-efficacy for physical activity especially in community-based settings. According to Quintiliani, Sattelmair and Sorensen (2008), 'The workplace offers several advantages for promoting physical activity in that a substantial number of the working population can be reached and multiple levels of influence on behavior can be targeted'. However, research indicated that blue-collar workers are less likely to engage in either leisure or supervised exercise (Cox, 1984); that well-educated persons are more likely to exercise than less educated persons and that PA also decreased with age (Sallis et al, 1985).

In workplaces, researchers have identified certain factors which influence participation in regular PA. They include job satisfaction, (Olorunsola, 2012), occupational demand and provision of sport facilities and equipment (Omolawon & Sanusi, 2006), lack of time due to responsibilities related to family and environment (Daskapan, Tunzun & Eker, 2006, Omolawon & Sanusi, 2006) and level of awareness of PA benefits (Umeifekwem, 2011).

The University workplace as a unique work setting is generally perceived as high income establishments. In Nigeria, it is essentially characterized by enhanced infrastructural and technologically automated environment. According to Emiola (2008) such environment has exacerbates physical inactivity and sedentary lifestyle. Incidentally, Akindutire and Adegboyega (2012) reported that chronic diseases associated with inactivity and sedentary living are on the increase among government and industrial workers in Nigeria, and suggested the need to gain better insight into the dynamics of PA behavior in such workplaces. However, for positive PA behavior to be effectively promoted and entrenched among diverse working population, research-based information on staff readiness and status of participation becomes not only a necessity but important major step for categorizing, characterizing and describing target populations according to respective levels of participation with the goal of developing population-based interventions.
The surveillance of prevalence of physical inactivity or activity provides research-evidence information on PA data needed for effective PA intervention planning, policy formulation and implementation. Population-based PA behavior promotion initiative or intervention that is based on the results of surveillance in living or workplace may become ineffective if not anchored on factual evidence and convincing theoretical foundation to explain and motivate individuals to engage in health behaviors (Nigg, et al., 2011). As a result, surveillance of PA which aligns with reputable and applicable theoretical framework that facilitate the understanding and description of the findings becomes imperative.

The Stage of change (SOC) construct within the Transtheoretical model (TTM) of Prochaska and Diclemente, (1983), has been adjudged one of the most important frameworks for explaining exercise behavior intentions, adoption, adherence and maintenance (Burbank, Riebe, Padula & Nigg (2002). Although, the model was primarily designed to explain the stages (Pre-contemplation, Contemplation, Preparation, Action and Maintenance) which individuals had to undergo in attempting to eliminate or adopt a health behavior (Prochaska & Diclemente, 1983), it was Marcus and colleagues (1998) who originally adapted the model to PA and applied it in the measurement of PA behavior, physical fitness, and health. According to them, the five stages of the original of stages of change model can correspondingly describe various stages of PA behavior of individuals.

Specifically, the stage of change framework has been used as a surveillance tool for comprehending how individuals or groups engage and maintain PA (Marcus & Lewis, 2003); for explaining intentions and pattern of readiness to participate in PA as well as designing and monitoring PA intervention program (Woods, Mutrie & Scott,2002); for identifying high-risk physically inactive groups among diverse populations and in work places (Peterson, Steven & Aldana, 1999); for designing and delivering marched PA intervention strategies with characteristics of individuals or community groups, (Marcus, et.al. 1998, Marcus and Lewis, 2003) and for identifying an individual's stage in regard to their physical activity participation (Jones et al., 2013).

According to Nigg and Riebe (2002), individuals may fall within any of the five distinct stages in their physical activity behavior namely:

Stage 1. Pre-contemplation: individuals are sedentary, not wanting to engage in any PA and have no intention of beginning to do so in the next six months.
Stage 2. Contemplation: individuals are not participating in PA, but, they intend to change their sedentary behavior within the next six months.
Stage 3. Preparation: individuals are not sufficiently being physical active, but intend to start with it in the next month.
Stage 4. Action: individuals have been engaging in regular PA for less than six month.
Stage 5. Maintenance: individuals have sustained their PA change for greater than 6 months.

Although there appears to be rapidly increasing prevalence of physical inactivity worldwide, reliable and valid data on PA participation are still lacking for many African countries especially as there is limited existence of national guidelines on PA for health in low and middle income countries including Nigeria (WHO 2004, 2008, 2010b, 2011). Regrettably, there is dearth of research investigation on PA behavior among workers especially in the university system in Nigeria. This study therefore applied the stage of PA behavior change model to characterize and describe the stage prevalence and differences in PA behavior among staff in selected south-eastern Nigerian universities. Two hypotheses of no significant difference on PA behavior prevalence for gender and staff category guided the study.

2. Method

The descriptive survey research design was utilized for this study. A two-stage sampling technique was adopted to recruit 600 employees, (aged 25-59years; male and female; teaching and non-teaching) from the staff databases of two Federal Universities in the south-eastern part of Nigeria. The first stage was a systematic categorization of staff into teaching and non-teaching staff and gender, while the second stage involved the recruitment of the desired number participants from each group through the simple random sampling procedure. Of the 600 study participants, 276 (46%) and 324 (54%) were in the teaching and non-teaching category respectively, while for gender, 336 (56%) were males and 264 (44%) were females. For the teaching category, there were 161 (26.83%) males and 115 (25.17%) females, and in non-teaching category, there were 175 (29.17%) males and 149 (24.8%) females (Table 1).

Approval for the study was obtained from the University of Nigeria, Ethical Committee. Self-reported data on participants' prevalence of PA readiness and participation were obtained using the Stage of PA Behavior Change Questionnaire (SPABCQ) adapted fron Exercise Stage Assessment Scale (Nigg & Riebe, 2002). The questionnaire consisted of two sections. Section A collected demographic data, while Section B obtained data on respondents' status of PA behavior using a one-question staging scale format. The introductory section of B part of the instrument defined the target/desire PA behavior and the conditions for attaining it, followed by a brief question on regularity of PA participation. Thereafter, the respondent was instructed to think carefully about the statement and question before ticking only one answer from a set of five PA behavior statement options that best describes his/her current PA behavior. The method was adopted to obviate the difficulty associated the multi-question self-algorithm scale variant (Marttila & Nupponen, 2003) such as respondents' confusion with regards to understanding the response instructions and inconsistency in transcribing of response scores for data analysis. Scoring of responses were on a 5-point likert scale ranging from a score of 1 for stage one, to a score 5 for stage five. The copies of the questionnaire were administered by trained research assistants.

Descriptive statistics of frequencies and percentages were used for classifying the PA stage distribution of study population across gender and staff category, while the t-test statistic was applied to test the hypotheses of no significant differences based on gender and staff categories. The choice of t-test statistic was made as issues have been raised about understanding stage of behavior change as a continuous process as opposed to the traditional approach of classifying it as a series of five distinct stages (Armitage, 2009) which has implication for its measurement scales across health behaviors especially PA (Nigg et al., 2011). As a result the generated data were transformed to interval data to enable data handling with a more robust t-test statistic.

The interpretation of activity status was described in two broad categorizations as either pre-action/high-risk, (made up of pre-contemplation, contemplation and preparation stages which require PA intervention program) or active, (consisting of action and maintenance stages but requiring consolidation and monitoring). This was similar to interpretations utilized by Jones et al. (2013). The t-test statistic was considered to be statistically significant when $P\text{-}values < 0.05$.
The completed copies of questionnaire were coded into a database platform and analyzed using the Statistical Package for Social Sciences (SPSS version 15.0).

3. Results

The pattern of PA readiness and participation of staff were assessed and the results of the findings presented in Table 2. In general, out of the entire respondents (n=600), 358 or 59.6% were in the pre-active stage and 242 or 40.4% were in active stage. Of the 59.6% who were in pre-active stage, 114 (19%) responders indicated being in the pre-contemplation stage, signifying inactivity and not thinking about becoming active; 104(17.3%) reported being in the contemplation stage, suggesting that although inactive, they were thinking of becoming active; and, 140(23.3%) specified that they were in preparation stage meaning that although not sufficiently active, they were thinking about starting PA in the next one month. On the other hand, of the 40.4% responders who were physically active, 134(22.3%) were in the action stage, meaning that they have been physically active at the recommended levels but for less than six months, while 108(18%) respondents indicated that they have been physically active at the recommended levels and for six or more months. In summary, these results reveal that greater number of staff were not in the desirable levels of readiness to participate in PA while fewer numbers of staff were in the desirable level.

With respect to gender, male respondents (336) distributed as follows 59(17.6%), 58(17.3%) and 78(23.2%) with a grand total 195 or 58.1% indicated pre-contemplation, contemplation and preparation stages respectively as

their status in readiness to initiate PA. This therefore translates to pre-action stage. Conversely, 76(22.6%) and 65(19.3%) (total 141 or 41.9%) respondents respectively signified that they were in Action and Maintenance stages. This result classifies them as being in action stage of PA participation. Of the 264 female respondents, 55 (20.8%) indicated they were at pre-contemplation stage; 46(17.4%) at contemplation stage and 62(23.5%) at preparation stage, giving a total of 61.7% for those in pre-action stage, however, 58(22%) and 43(16.3%) specified action and maintenance stages respectively to remain at the action stage (38.3%). This result ordinarily discloses that majority of males and their female counterparts were generally at the pre-action stage of readiness to initiate PA behavior.

Table 2 also categorized the teaching staff into their respective stages in PA participation prevalence scale. In general, 157 representing 6.9% of teaching staff respondents were classified as being in pre-action stage for PA. Of these, 34 (12.3%), 69(25%) and 54(19.6%) were at pre-contemplation, contemplation and preparatory stages respectively, while, 119(43.1%) who reported being in action phase had 63(22.8%) and 56(20.3%) correspond to action and maintenance stages for PA in that order. Similarly, of the 324 non-teaching staff respondents, results show that 201(62.1%) were in pre-action for PA, with 80(24.7%), at pre-contemplation, 35(10.8%) at contemplation and 86(26.5%) at preparatory stages, while 71(21.9%) and 52(16%) were in action and maintenance stages respectively representing 123(37.9%). A cursory observation indicates that the percentage of both teaching staff and non- teaching staff at the pre-action stage were greater than their respective groups at the action stage.

Further analyses of independent-sample t-test to compare prevalence of stages of change for gender and category of staff (Table 3) yielded no significant differences in both gender and staff category. For gender: male (M=3.09; SD = 1.39) and females (M = 2.95, SD = 1.37); t (598) = 1.20, p= .23, two tailed). Similarly, for staff category: Teaching staff (M=3.13; SD = 1.33) and non teaching staff (M = 3.03; SD = 1.43); t (598) 1.78, p = .07, two tailed). Although there were no significant differences obtained between males and females scores and between teaching and non teaching staff on scores of PA prevalence, it would however be observed that the scores followed the same pattern of manifestation showing that majority of staff fall within the PA pre-action stage in each of the sub-groups studied.

4. Discussion

This study assessed the prevalence of PA readiness and participation among university staff members in south-east Nigeria. The findings generally indicate a low prevalence PA across all the studied sub-groups. Approximately 60% of all respondents representing (pre-contemplation, contemplation and preparation) were not participating in PA or doing so infrequently. Specifically, majority of males, females, teaching and non-teaching members of staffs were in pre-action or pre-adoption for PA, while less than half of the respondents were regularly active. This finding is consistent with other findings in similar studies. For example, Marshall and Biddle (2001) concluded in a meta-analysis study of transtheoretical model application to PA that more than half (53%) of the stage distribution data were in pre-action stage, while less than half were in action stage. The findings also corroborate the findings of WHO (2004) which reported that 60% of global population fails to achieve the recommended PA levels. In this study, pattern of stages of change for PA across the sub-group of gender and staff category was similar with greater proportion of participants located at the pre-action stage and less proportion situated at the action stage This group represents a significant fraction of the study population whose characteristics would require matched-PA intervention program to effectively move them as step forward from their present non active stage to active level.

Further examination of the distribution of the results related to action stage in this study reveals that comparatively, greater percentage proportion of respondents were at the action phase (22%) than at the maintenance phase (18%). The same trend presents across all the sub-groups. This means that a greater percentage of the respondents (action phase (22%)) were still relatively 'new' participants in PA since they reported participating for less than six months. This finding however, differed with those of Marshall and Biddle (2001) who reported greater percentage for the maintenance stage population group (36%) when compared to the action stage population group (11%). The finding is revealing as it possess an important implication for PA behavior sustenance in long run. Identification and monitoring of individuals or groups in different PA stage requires different motivational and PA design approaches, moreso they make for efficient provision of both tailored and stage-targeted interventions (Marcus & Lewis, 2003). Therefore, this understanding that a considerable percentage of the study population are relatively new (regularly active for less than six months) in their PA participation implies the need to devise strategies that will assist them maintain their physical activity participation in order to avert possible PA reversion in their journey to physically active lifestyle. According to Marcus et al. (2000), individuals in the action stage should be encouraged to incorporate several forms of exercise into their routine to decrease boredom and that they need to be provided with social support which is a crucial factor in sustaining physical activity.

In general, no significant differences were found across stages of change for both gender and category of staff (Table 3). It therefore suggests that pattern of readiness for PA within stages of change did not differ when compared by gender or by staff categories. As a result, program to promote PA may only consider prevalence within stages of change and not necessarily to specific sub-population characteristics.

5. Conclusion

This study assessed the prevalence of Physical activity stages of change among members of staff in some selected Nigerian universities. The result of this study has shown that majority of University staff members were at the pre-adoption or pre-action stage, therefore there is need to facilitate transition from that stage to action stage through motivation, education and social support. This situation therefore presents opportunity for exercise scientists, physical education and health education experts to explore development of attractive stage-specific PA strategies that will key university staff to regular and sustained PA behavior. In addition, PA sensitization workshops, seminars that will incorporate both tailored and stage-targeted PA intervention approach and simple aerobic practical classes on some designated days of the week may serve to generate improved PA behavior interest among staff. This strategy would hopefully enable University staff to believe they can improve or maintain their PA stage status and by extension facilitate healthy living through direct prevention of chronic diseases. The results from this study support the application of the stages of change model in categorizing and characterizing PA behavior adoption in workplace population-based setting.

6. Limitations of the Present Study

Some of the limitations of this study include; data collection was solely by self-reports of PA as a result there may be likelihood of over-reporting of PA (Sallis et al., 2000 & De Bourdeaudhuij, et al. 2005). The present study assessed prevalence of stage of change in physical activity but not the amount and type of PA performed by respondents. Thus, this dimension would have provided the needed further information necessary for designing intervention strategies.

7. Recommendations

PA intervention strategies to University members of staffs can be programmed based on stage of change concepts across the general population of University staff since no differences were found between gender and staff category. As a result, it is recommended that University authorities can set off the process establishing workplace health promotion initiative that could undertake PA intervention targeted at PA behavior ambivalence since significant proportion of the respondents were at 'crossroads', (i.e. preparation stage) reflecting whether to adopt a sustained active participation or to relapse to inactivity. Similarly, health and PA behavior awareness promotion messages using both electronic and print media might be effective in sensitizing staff on the need for regular participation in PA. In addition, training and retraining program are needed for university based exercise and PA scientists in order to be the up to date in contemporary concepts and techniques of motivating people especially staff to adopt and maintain regular PA. Finally, although the findings of this study is a major contribution to national data on PA for specific group, further additional assessment studies are needed to build on the current understanding of PA attitudes and motivations in university environment.

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Table 1. Gender and Staff Category Distribution of the Respondents

Gender	**Staff category**		**Total**
	Teaching Staff	**Non-Teaching Staff**	
Male	161 (26.83%)	175 (29.17%)	**336 (56%)**
Female	115 (25.17%)	149 (24.8%)	**264 (44%)**
Total	**276 (46%)**	**324 (54%)**	**600 (100%)**

Table 2. Stages of PA Behaviour Readiness and Participation among Categories of University Staffs

	Pre-Action Stage				Action Stage		
	Pre-contemplation	Contemplation	Preparation	**Total for Pre-Action stage**	Action	Maintenance	**Total for Action Stage**
	n %	n %	n %	**n %**	n %	n %	**n %**
Total Group (n=600)	**114 (19.0)**	**104 (*17.3*)**	**140(23.3)**	**358(59.6)**	**134(22.3)**	**108 (18.0)**	**242(40.4)**
Males (n=336)	59 (17.6)	58 (17.3)	78 (23.2)	**195(58.1)**	76 (22.6)	65 (19.3)	**141(41.9)**
Females(n=264)	55 (20.8)	46 (17.4)	62 (23.5)	**163(61.7)**	58 (22.0)	43 (16.3)	**101(38.3)**
Teaching staff (n=276)	34 (12.3)	69 (25.0)	54(19.6)	**157(56.9)**	63(22.8)	56 (20.3)	**119(43.1)**
Non-Teaching (n=324)	80 (*24.7*)	35 (10.8)	86(26.5)	**201(62.1)**	71 (21.9)	52 (16.0)	**123(37.9)**

Table 3. t-test of Significant Difference on Stage of PA Readiness and participation across Gender and Staff Category

Status	**N**	**Sig. (2 tailed)**	**Computed t-value**	**dfs**	**Level of sig.**
Male	336	0.23	1.20*	598	0.05
Female	264				
Academic	276	0.07	1.78*	598	0.05
Non-academic	324				

* not significant

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